Amendments to the claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claims 1-33 (Cancelled)

34.(Currently amended) Apparatus for ray tracing through a medium having multiple variations in refractive index including:

an image information acquirer providing information relating to local refractive index variations at any multiplicity of three dimensional locations in said medium, said local refractive index variations being determined by any one of differential interference contrast (DIC) imaging, phase microscopy and fluorescence microscopy; and

a computer employing an analytically determined path of a ray through the multiplicity of three dimensional locations in the medium, for a plurality of rays impinging thereon in different directions, by utilizing ~~known~~ said local variation of the refractive index at ~~a~~ said multiplicity of three dimensional locations in the medium.

35.(Currently amended) A method of ray tracing through a medium having multiple variations in refractive index including:

determining local variation of the refractive index at ~~a~~ any multiplicity of three dimensional locations in the medium by any one of the methods of differential interference contrast (DIC) imaging, phase microscopy and fluorescence microscopy; and

analytically determining the path of a ray through the multiplicity of three dimensional locations in the medium, for a plurality of rays impinging thereon in different directions.

Claims 36 - 37 (Cancelled)

38.(Previously presented) Apparatus according to claim 34, and wherein said ray tracer determines an aberrated wavefront for said plurality of rays; and also comprising an adaptive optics controller utilizing said aberrated wavefront to control an adaptive optical element in a confocal microscope, thereby to correct aberrations resulting from the variations in the refractive index.

39. (Previously presented) A method according to claim 35, and also comprising the steps of:

determining an aberrated wavefront for said multiplicity of rays; and

utilizing said aberrated wavefront to control an adaptive optical element in a confocal microscope, thereby to correct said aberrations resulting from said local variation of the refractive index.

40. (Previously presented) A method for confocal microscopy comprising the steps of:

providing a confocal microscope having an imaging path between a three-dimensional sample and its output image plane;

determining variations of the refractive index in said three-dimensional sample; and

disposing in said imaging path a three-dimensional medium with refractive properties that correct aberrations resulting from said variations of the refractive index in the three-dimensional sample.

41. (Currently amended) Apparatus for confocal microscopy comprising:

an image information acquirer providing information relating to ~~varaitions~~ variations in the refractive index in a three-dimensional imaged volume, said apparatus having an imaging path between said three-dimensional imaged volume and said image information acquirer; and

a three-dimensional medium disposed in said imaging path; wherein said three-dimensional medium has refractive properties that correct aberrations resulting from variations of said refractive index in said three-dimensional imaged volume.